

CLAIMS

What is claimed is:

1. A monolithic ceramic filter comprising a honeycomb structure, wherein a portion of partition wall of the honeycomb structure extends from the inside of the honeycomb structure to an outer wall surface of the honeycomb structure and has an increased thickness as compared to the remaining portion of the partition wall to constitute a flow resistance relaxing portion.

2. The ceramic filter as defined in claim 1, wherein said flow resistance relaxing portion has at least one filtrate discharge conduit opening extending to an outer wall surface of the honeycomb structure within the increased thickness of the flow resistance relaxing portion.

3. The ceramic filter as defined in claim 1, wherein the flow resistance relaxing portion extends over the entire axial length of the honeycomb structure.

4. The ceramic filter as defined in claim 3, wherein the flow resistance relaxing portion comprises a plurality of wall portions of increased thickness which extends from one side to the other side thereof.

5. The ceramic filter as defined in claim 3, wherein the flow resistance relaxing portion comprises a plurality of wall portions of increased thickness which extend parallel to each other.

6. The ceramic filter as defined in claim 2, wherein the filtrate discharge conduit opening comprises bores extending transverse of the honeycomb structure.

7. The ceramic filter as defined in claim 6, wherein the said bores are disposed parallel to each other.

8. The ceramic filter as defined in claim 1 or 2, wherein the flow resistance relaxing portion has a thickness 2 to 5 times of the partition wall of the honeycomb structure.

9. A monolithic ceramic filter comprising a honeycomb structure which comprises communication voids separated from cells of the honeycomb structure of the filter cell partition walls, said voids communicating with the lateral outside of said honeycomb structure over the entire length of the honeycomb structure and extending over the entire axial length thereof.

10. The ceramic filter as defined in claim 9, wherein said communication voids are each a groove-shaped recess extending from the outer peripheral wall of said honeycomb structure toward the inside.

11. The ceramic filter as defined in claims 9, wherein the honeycomb structure has such a shape as to permit production thereof by extrusion molding.

12. The ceramic filter as defined in claim 9 which comprises an end frame surrounding the honeycomb structure

fitted on at least one end thereof.

13. The ceramic filter as defined in claim 12 wherein said end frame has protrusions engaged in said communication voids to close the same at an end of the honeycomb structure.

14. The ceramic filter as defined in claim 11, wherein said communication voids extend from the inside of the honeycomb structure except central part of the honeycomb structure in the transverse direction thereof.

15. The ceramic filter as defined in claim 11, where in said communication voids extend from the outer peripheral wall toward the inside ending at an intermediate position.

16. The ceramic filter as defined in claim 15, wherein said communication voids extend alternately from one side of the outer peripheral wall and from the opposite side thereof as viewed in the cross section of the honeycomb structure.

17. The ceramic filter as defined in claim 1, 2, 9 or 12, wherein the honeycomb structure is formed of a porous ceramic material and has a filtration membrane on a surface facing each cell of the honeycomb structure.

18. The ceramic filter as defined in claim 17, wherein an intermediate porous layer is disposed between the honeycomb structure and the filter membrane.

19. The ceramic filter as defined in claim 17, wherein said filter membrane is a porous ceramic having a smaller

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pore size than that of honeycomb structure.

20. The ceramic filter as defined in claim 9, wherein said honeycomb structure further comprises a flow resistance relaxing portion which is formed of a thickened portion of the cell partition wall, said thickened portion extending from the inside of the honeycomb structure to an outer wall thereof.

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21. The ceramic filter as defined in claim 1 or 2, wherein said flow resistance relaxing portion has a thickness 1.5 to 10 times of the partition wall of the honeycomb structure.

22. The ceramic filter as defined in claim 1, 2, 9 or 20, wherein said honeycomb structure has a cross section with symmetry.